What is claimed is:

1. A wiring connection structure for a printed circuit board for interconnecting wiring circuit traces on a plurality of circuit trace layers applied on a plurality of printed circuit board layers and electrically isolated there between by the printed circuit board layers and having a printed circuit board multi-layer structure, characterized by:

a through hole with a convoluted shaped cross section having an interior wall that vertically extends through and intersects and exposes a plurality of wire circuit traces and having a plating of conductive material applied to the interior wall electrically connecting a plurality of wire exposed circuit traces on a plurality of circuit layers.

2. An EMI shielding structure for a printed circuit board for shielding wiring circuit traces on a plurality of circuit trace layers applied on a plurality of printed circuit board layers and electrically isolated there between by the printed circuit board layers and having a printed circuit board multi-layer structure, characterized by:

a trench having a rim about an opening of the trench at a top printed circuit board layer and said trench extending through a plurality of printed circuit board layers to a grounding plane exposing said grounding plane and said trench having an interior wall with a conductive plating

material applied over said wall and said trench having a length greater than two times a breadth of said trench and said wall vertically extends around the perimeter of the printed circuit board and said plating electrically connects to said exposed ground plane and wraps over and laterally extends from said rim forming a lip.

3. A wiring connection structure for a printed circuit board for interconnecting a plurality of wiring traces applied on a plurality of printed circuit board layers and electrically isolated by printed circuit board layers and having a printed circuit board first layer with a main surface, characterized by:

a first wire trace applied to said main surface having a first terminal landing pad with a first through hole there through, said first through-hole having a convoluted shaped cross section with a continuous perimeter;

a printed circuit board first insulation layer formed over said first wire trace having a second through hole of identical cross sectional geometry to and vertically aligned with the first through hole and extending to the first terminal landing pad exposing a portion of said first landing pad; and

a second wire trace applied to the printed circuit board first

insulation layer having a second terminal landing pad with a third through hole having identical geometry to and vertically aligned with the first and second through holes, wherein said first, second and third through holes are adjoining and are plated there through with an electrically conductive material forming a plated through hole with a convoluted cross section that vertically intersects the first and second terminal pads and electrically connects the first wire trace and the second wire trace by a connection between the first and second wire trace terminal landing pads and the plated through hole.

4. The wiring connection structure of **claim 3**, wherein the first through hole has a shaped continuous curved cross section centered on a circumference diameter of a standard single diameter circular profile micro via and wholly contained within a perimeter defined by the circumference diameter.

5. The wiring connection structure of **claim 4**, wherein the continuous curved cross section is "U" shaped.

6. The wiring connection of **claim 4**, wherein the continuous curved cross section is "L" shaped.

7. The wiring connection of **claim 4**, wherein the continuous curved cross section is "+" shaped.

8. The wiring connection structure of **claim 3**, wherein the first through hole has a shaped continuous curved cross section centered on a circumference diameter of a standard single diameter circular profile micro via and extends beyond the perimeter defined by the circumference diameter.

9. A reference plane structure of a printed circuit board for fixing a potential reference for a plurality of wiring circuit trace layers that are electrically isolated there between by a plurality of printed circuit board layers and having a printed circuit board first layer with a main surface, characterized by:

a first wire trace circuit layer applied to said main surface;

a first printed circuit board-insulating layer formed over said first wire trace circuit layer;

a first reference plane applied over the first printed circuit board insulation layer;

a trench having an interior wall and extending about a perimeter encompassing the first wire trace circuit layer and extending through the printed circuit board first layer, extending through and exposing the first wire trace circuit

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layer, extending through the first insulation layer and extending to the reference plane exposing said reference plane; and

a conductive plating layer on the interior wall electrically connecting the first wire trace layer to the grounding plane.

10. The reference plane structure of **claim 9,** where the perimeter encompasses a portion of the first wire trace circuit layer.

11. The reference plane structure of **claim 9**, where the reference plane is fixed at a ground potential.

12. The reference plane structure of **claim 9**, where the reference plane is fixed at a reference voltage.

13. A wiring connection structure for a printed circuit board for interconnecting a plurality of wiring circuit traces applied on a plurality of printed circuit board layers and electrically isolated by printed circuit board layers and having a first printed circuit board layer with a main surface, characterized by:

a first wire circuit trace having a width applied to said main surface and having a first terminal landing pad with a terminal width the same as the width of the first wire trace

and having a first through hole with a major and minor diameter where the minor diameter is less than the width of the first trace and the major diameter is elongated and directional along a direction of the terminal landing pad;

a printed circuit board first insulation layer formed over said first wire trace having a second through hole having identical geometry and orientation as and vertically aligned with the first through hole and extending to the first wire trace terminal landing pad; and

a second wire circuit trace applied to the printed circuit board first insulation layer having a second terminal landing pad with a third through hole having identical geometry to and aligned with the first through hole,

wherein said first, second and third through holes are adjoining and are plated there through with an electrically conductive material forming a plated through hole vertically intersecting the first and second terminal pads and electrically connecting the first wire trace and the second wire trace by a connection between the first and second landing pads and the through hole.

14. The wiring connection structure of **claim 13**, wherein the major diameter is at least about twice that of the minor diameter.

15. The wiring connection structure of **claim 13**, wherein the major diameter is at least about three times that of the minor diameter.

16. A wiring connection structure for a printed circuit board for interconnecting a plurality of wiring circuit traces applied on a plurality of printed circuit board layers and electrically isolated by printed circuit board layers and having a first printed circuit board layer with a main surface, characterized by:

a first wire circuit trace having a first width applied to said main surface and having a first terminal landing pad with a second width which is greater than the first width and having a first through hole with a major and minor diameter and the minor diameter is less than the second width and the major diameter is greater than the first width and is directed along and within the terminal landing pad;

a printed circuit board first insulation layer formed over said first wire trace having a second through hole of identical geometry and orientation as and vertically aligned with the first through hole and extending to the first wire trace terminal landing pad; and

a second wire circuit trace applied to the printed circuit board first

insulation layer having a second terminal landing pad with a third through hole having identical geometry to and aligned with the first through hole,

wherein said first, second and third through holes are adjoining and are plated with an electrically conductive material forming a plated through hole vertically intersecting the first and second terminal pads and electrically connecting the first wire trace and the second wire trace by a connection between the first and second landing pads and the through hole.

17. A method of interconnecting a plurality of wiring circuit traces applied on a plurality of printed circuit board layers and electrically isolated by printed circuit board layers characterized by the steps of:

applying a first wire trace to a main surface of a first printed circuit board layer where said wire trace has a first terminal landing pad;

forming a first printed circuit board insulation layer over said first wire trace;

applying a second wire trace over the first insulation layer, said trace having a second terminal landing pad vertically aligned over the first landing pad;

cutting with a cutting means vertically down through the first

landing pad, the insulation layer, and the second landing pad removing away material about an axial centerline of the cutting means with a generally circular patterned cutting action;

translating the cutting means laterally while continuing the circular patterned cutting action forming a non-circular through hole through the first and second pads and the insulation layer to define an interior wall and exposing the first and second terminal pads; and

plating the interior wall with an electrically conductive material, electrically connecting the first and second wire traces by the connection established between the first and second terminal landing pads and the electrically conductive material plating.

18. The method of interconnecting a plurality of wire traces of **claim 17,** the cutting is cutting by plasma ablation.

19. The method of interconnecting a plurality of wire traces of **claim 17,** the cutting is cutting with a laser.

20. A method of grounding and shielding a plurality of wiring circuit traces applied on a plurality of printed circuit board layers electrically isolated

by a plurality of printed circuit board layers characterized by the steps of:

applying a first wire circuit trace to a main surface of a first printed circuit board layer said first wire trace having a first ground terminal lead;

forming a first printed circuit board insulation layer over said first wire trace;

applying a grounding plane over the first printed circuit board insulation layer;

cutting vertically down through the first printed circuit board layer and the first insulation layer removing away material about an axial center line with a generally circular patterned cutting action with a cutting means to a depth sufficient to transcend the first wire trace and extend to the grounding plane ;

translating the cutting means laterally while continuing the circular patterned cutting action forming a trench extending to form a perimeter at least partially about the first wire trace having an interior wall exposing the first ground terminal lead and the ground plane; and

plating the interior wall of the trenched through hole with an electrically conductive material electrically connecting the first trace to the grounding plane.

21. An EMI shielding structure for a printed circuit for shielding a plurality of wire circuit trace layers that are electrically isolated by printed circuit board layers, characterized by:

a printed circuit board having a plurality of wire trace circuit layers and a plurality of printed circuit board insulation layers there between and having a plurality of printed circuit board edges and a grounding plane; and

a first trench having an interior wall and extending in parallel with the board edge within a perimeter defined by the board edge encompassing the printed circuit board wire circuit trace and extending through the printed circuit board layers and extending to the ground plane, exposing said ground plane; and

an electrically conductive plating material applied over the interior wall there through and electrically connecting to the exposed ground plane providing at least a partial perimeter shield for the printed circuit board.

22. The EMI shielding structure of **claim 21,** where the perimeter encompasses a portion of the printed circuit board.

23. The EMI shielding structure of **claim 21**, further characterized by:

a second trench having an interior wall and extending wholly within and in parallel with an outer perimeter defined by the first trench and extending through the printed circuit board layers and extending to the ground plane exposing said ground plane,

wherein the second trench interior wall is plated with an electrically conductive plating material applied over the interior wall there through and electrically connecting to the exposed ground plane providing a double trench shield.

24. The EMI shielding structure of **claim 21**, further characterized by:

an EMC sensitive track of conductive material extending wholly within and parallel with an outer perimeter defined by the first elongated through-hole and disposed between circuit board insulation layers through which the trenched through-hole extends.

25. An EMI shielding structure for a printed circuit for shielding a plurality of wire trace layers that are electrically isolated by printed circuit board layers characterized by:

a printed circuit board having a plurality of wire trace circuit

layers and a plurality of printed circuit board insulation layers there between and having a grounding plane layer with all layers bonded one over another;

a first trench with an continuous rim about an opening of the trench at a top layer of the printed circuit board and said trench having an interior wall and said trench extending around a perimeter of the printed circuit board;

an electrically conductive plating applied over the interior wall of the trench extending and electrically connecting to the ground plane and extending to an wrapping over the rim and extending laterally from said rim forming a lip; and

an EMC sensitive track coaxially extending through a partial outer shield defined by the trench interior wall, the plating lip and the ground plane.

26. The EMI shielding structure of **claim 25**, further characterized by:

a second trench with an continuous rim about an opening of the trench at a top layer of the printed circuit board and said trench having an interior wall and said trench extending in parallel with the first trench around a perimeter within the first trench; and

an electrically conductive plating applied over the interior wall of

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the trench extending and electrically connecting to the ground plane and extending to an wrapping over the rim and extending laterally from said rim forming a second lip which joins the first lip,

where the EMC sensitive track coaxially extends through an outer shield defined by the first and second trench interior walls, the first and second plating lips and the ground plane.